JUNIOR ATHROPLOGIST: MOBILE GAME BASED LEARNING APPS FOR CHILDREN IN SARAWAK CULTURAL VILLAGE

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ABSTRACT

JUNIOR ANTHROPOLOGIST: GAME BASED LEARNING APPS FOR CHILDREN IN SARAWAK CULTURAL VILLAGE

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This paper reports on the development of mobile app (Junior Anthropologist) which is the mobile game based learning apps for children in Sarawak Cultural Village (SCV). The use of this app could possibly enhance the visitors' experiences at SCV particularly the children. This app could be used for a small group of children too, not limited to one device per children. This could benefit SCV whereby they do not haves to invest on providing the physical devices and eliminate the issues of insufficient information provided to the visitors. With the rapid growth of technologies, the museum and cultural heritage institution especially in Malaysia such as SCV should take this opportunity to give a better services and information to the visitor. This project is one of the opportunities to improve their services and information about SCV.

ABSTRAK

JUNIOR ANTHROPOLOGIST: APLIKASI PERMAINAN MUDAH ALIH BERASASKAN PEMBELAJARAN KEPADA KANAK-KANAK DALAM KAMPUNG BUDAYA SARAWAK

MOHAMAD SOFI BIN ABIDIN

Kajian ini melaporkan tentang pembangunan aplikasi telefon mudah alih (Junior Anthropologist) dimana ia merupakan aplikasi permainan mudah alih yang berteraskan pembelajaran kepada kanak-kanak dalam Kampung Budaya Sarawak (KBS). Penggunaan aplikasi ini mungkin dapat meningkatkan pengalaman melawat di KBS terutama kepada kanak-kanak. Aplikasi ini juga boleh digunakan dalam sekumpulan kecil kanak-kanak, tidak terbatas kepada satu peralatan kepada seorang kanak-kanak. Aplikasi ini mungkin dapat memberi keuntungan kepada KBS dimana mereka tidak perlu melabur untuk menyediakan peralatan fizikal serta dapat menangani isu kekurangan maklumat yang disampaikan kepada para pelawat. Selaras dengan perkembangan pesat teknologi, muzium dan institusi warisan budaya terutama sekali di Malaysia, sebagai contoh KBS, patut mengambil peluang ini untuk memberi perkhidmatan dan maklumat yang lebih baik kepada pengunjung. Projek ini merupakan satu peluang untuk meningkatkan perkhidmatan dan maklumat tentang KBS.

CHAPTER 1

INTRODUCTION

1.0 Background of Study

Tour guide is an in-charge person that is responsible to lead participants or tourists whether an individual or groups on tour, ensuring that itineraries are followed, provides commentary in an informative and entertaining manner, and creates positive experiences for the participants (James & Victor, 2014). It is important to ensure the tourists will get more information about the place they visit and not feel bored while visiting certain place. Living museum and cultural heritage is one of the places that need a tour guide in order to maximize the information gained by the visitor. Children are a group of visitors who need a tour guide for guiding them while visiting museum and cultural heritage. This is because children have different attention levels compared to adults. Children will easily lose their focuses on what is happening around them. Using an adult as a tour guide may not attract their attention.

With the rapid growth of mobile technology, the traditional tour guide can be replaced with a mobile guide. Mobile guide is one of the available solutions to replace traditional tour guide because it is easy to carry anywhere and portable. In addition, children will be very excited while using any mobile technology such as a mobile phone. According to the study that conduct by Northwestern University (2014), children that are used IPad as a learning's tool in classroom showed enthusiasm and excitement. They engaged with the technology and able to captured children attention. However, the design of the mobile guide should be suited with children demands in order to attract their attention while using it. The design should engage with children's cognition in some activities that are attractive and can deliver them the information they need to acquire. According to Damala (2009), the design of mobile guide for children should be oriented to education or learning such as treasure hunt, observation games, or mystery/detective games, in which the user have to solve a mystery case regarding one or several museum artefacts.

The technology of mobile guide has been introduced in museums and cultural heritage sites for more than 60 years (Tallon, 2008). For instance, at Canadian War Museum (CWM), the museum has uploaded the mobile guide application on the iTunes and let user to install it on their smartphone when visiting the museum (Canadian War Museum [CWM], 2013). This mobile guide consist of museum information and event schedule, interactive floor maps, interactive point of interest, and quiz question (CWM, 2013). Visitor can use this application as a mobile guide while visiting the exhibition at CWM.

Sarawak is the place that famous with the diversity of races and ethnicity. There were 28 ethnic in Sarawak, and Iban ethnic is the majority. So, it is quite difficult to know, learn and explore about all the ethnicity that are available in Sarawak. Alternatively, Sarawak Cultural Village (SCV) was built to give a facility for people to explore and learn about the

ethnicity in Sarawak. Generally, SCV provide the exhibition about the ethnicity and cultural heritage existing around Sarawak. SCV was built on 17 acres land located near Damai Beach Resort, Kuching Sarawak. SCV is one of the most popular hotspot for tourism in Sarawak. SCV can attract thousands of visitors around the world.

Collaborating with Sarawak Cultural Village, this project aims to develop mobile game as a mobile guide for children in Sarawak Cultural Village. Figure 1 shows the main entrance of SCV

Figure 1.1: Sarawak Cultural Village

1.1 Problem Statement

About 75% of museum and other cultural spaces visitors are consist of children accompanied by their families (Damala, 2009). Only handful of living museums have started to use the digital technology to enhance their visitors' experiences (Leah, 2015). However,

many museums in Malaysia do not have mobile guide installed for visitors to use during their visits. In addition, none of living museums and cultural heritages in Malaysia provide mobile guide for their visitors, especially the information facility for the children.

1.2 Objectives of Study

The objectives are divided into two sections which are general objective and specific objective

1.2.1 General Objective

This project aim to introduce the use of mobile guides (smartphone apps) for children at the living museum

1.2.2 Specific Objective

Design and develop mobile game based learning app for children at SCV particularly for Bidayuh's Houses.

1.3 Research Significance

This study aims to develop mobile game application as mobile guide for children that would allow the accessibility of information of artifact in Bidayuh's houses at SCV

1.4 Limitation of Study

The scope of study is only focused on Bidayuh's Houses exhibition of SCV, which involves development of mobile game application as a tour guide for children. This study does not cover other exhibition/housed at SCV

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Visitors who visit museums want to learn something new, but if they are provided too much information, this can cause them to react negatively to the lesson. As such, only relevant information should be delivered to them in a concise manner. Technology now plays an important role in guiding the visitors through the exhibits, and enriching their overall experience (Kuflik, 2011). The ways visitor interact with museum exhibition are evolving from time to time. Assisting technology in museum has been developed starting from the usage of audio guide to the implementation of virtual or augmented reality and the latest is the introduction of multimedia guide on smartphone apps.

The evolution of mobile guide technologies has changed the way visitors interact with the exhibition from time to time. At the early stage, mobile guide is only developed

for delivering audio messages in sequences which need visitors to follow up the sequences when doing a visit (Othman, 2012). It would be a disadvantage because it did not allow visitors to choose which exhibition that they are interest in. On the other word, this technology was not user friendly and sometime can make visitors feel bored. The enhancement of technologies has changed the structure of mobile guides to be more user-friendly and user-oriented. Free choice concept was introduced to the mobile guide. Latest mobile guide technology has provided free tour choices with multimedia element such as text, graphic, audio, video and more (Othman, 2012). User can freely choose which exhibition they want to visits.

2.1 Evolution of Mobile Guide

Traditionally, museums display their artefacts in a static manner and did not allow visitors to touch the artefacts makes learning passive (Ciolfi & Bannon, 2002). Hence, the first assisting technology that helped visitors exploring museum; namely audio guide was introduced. The introduction of audio guide solely can be considered as a replacement for an individual museum guide or known as docent. On one aspect, it is a disadvantage because visitors cannot ask anyone if they have any question about certain artefact. However, it will be an advantages to the visitors if the audio guide is filled with the attractive/creative stories about the exhibition. This will can enhance visitor experiences engaging and compiling (AudioConexus, 2010). Audio guide is still used in museums worldwide such as Louvre Museum in Paris, The Metropolitan Museum of Art in New York and Tate Modern in London. Since museum is also considered as a place for learning, it is crucial for developer to

develop an interactive environment where people can learn and enjoy the process (Ciolfi and Bannon, 2002).

In addition, the implementation of virtual reality in museum become irrelevant these day. This is due to the development of mobile devices guide, a technology which accommodates virtual environment. One of the applications of this mobile device guide is the free-choice tour, an application that helps visitors to design their own routes in a museum (Fevgas, Tsompanopoulou & Bozanis, 2011). There are also other mobile device guides developed such as "Rijkswidget, the app of Rijksmuseum in Amsterdam" (Economou & Meintani, 2011). Each museums have distinct interactive apps, but most of them offers the same museum exploration aid during the user's visits, which usually starts at the beginning, and ends after the visit is done. The virtual environment apps can only be executed during the visit of the museum.

It is well known that the use of virtual environment in museums are one of the main factor of attraction for visitors, but because of the large spaces that virtual environment system requires such as the CAVE, it is clear that mobile guide offers a serious advantages against these. As stated by Carrozino and Bergamasco (2010, p. 457), an immersive virtual reality systems, even with the function of only visual feedback, usually requires large spaces to operate compared with a simple multimedia kiosk. On the other hand, the usage of smartphone apps does not require any space, and most of all, are not limited to only visual feedback.

The costs of implementing museums with virtual reality technologies are not surprisingly high. One of the major problems in implementing this rather new technology is the financial curb, as the costs are bound to be higher than the operational (EPOCH, 2007). Carrozino and Bergamasco (2010) stated that to implement virtual reality systems successfully, a lot of people with specific expertise are usually brought in as several teams with different professional background such as programming, 3D graphics and equipment specialists. The costs of these team of specialists alone is not cheap and once the system is ready and launched, the maintenance team would have to be specialists too, which will also costs dearly. Hence, smartphone apps have advantages in terms of cheaper costs and practicality compared to that of virtual reality. To compare between the advantages of developing mobile guide apps for museums and the implementation of virtual environment therefore, has a clear conclusion.

It is almost certain that a problem will arise from cultural heritage specialists and computer experts in terms of miscommunication that leads to the confusion of interpretation and representation of the past (Styliani et al., 2009). The specificity and clear details of the design must also be considered as sometimes the graphics of the systems might be too vivid, too realistic, and this might cause viewers to relate it to some sort of a flaw directly (Maschek et al., 2009, p. 450). Therefore, a clear, precise and accurate representation of history is vital to avoid visitors from interpreting the wrong information. Although smartphone app development must adhere strictly to certain rules in its development, it is not as strict in developing virtual reality systems because there are many ways an image can be captured and modified, with the limits of not changing the image to an entirely new different image until viewers are unable to recognise the artefacts.

The prolonged use of interactive devices for a long period of time will result in the wear and tear of the devices parts and replacements of those parts are inevitable. It is clear that the cost to maintain the system will not be cheap. In addition, the interactive devices is not made to be flexible, to be suited to all types of visitors, and this will cause several types of viewers to be disappointed, especially children (Lehman, 2009). Museum do not have to bear expensive equipment when smartphone apps are being used as the interactive medium because the devices are almost surely being brought by the visitors via their own smartphones (EPOCH, 2007).

2.2 Designing User Interface (UI) for children

According to Nam (2010), the development of user interface in terms of navigation and usability issues for children does not differ much from adults. However, the context and theme must suit the targeted audience. Hence the interface designers and developers have responsibility to seek for a good quality products design which will positively contribute towards the children's development. For example, childrens' emotional, language, cognitive, memory and many others. In addition, the relevance support must be taken into consideration when designing children interface as they perceived things differently from adults.

CHAPTER 3

METHODOLOGY

3.0 Overview

This chapter will discuss about the requirement of the methodology needed to complete this study.

3.1 Research Design

In this research, Mobile Application Development Lifecycle (MADLC) was used as the main methodology. Generally, MADLC involved six steps of mobile application development which are discovery, scope of work, designing the app, developing the app, testing the app for quality and launching (Patel, 2014).

3.2 Mobile Application Development Lifecycle

A mobile application development lifecycle is made of six main step of system development. It can be illustrated in figure 3.1. The goal of this lifecycle is to design, develop and launch the mobile apps.

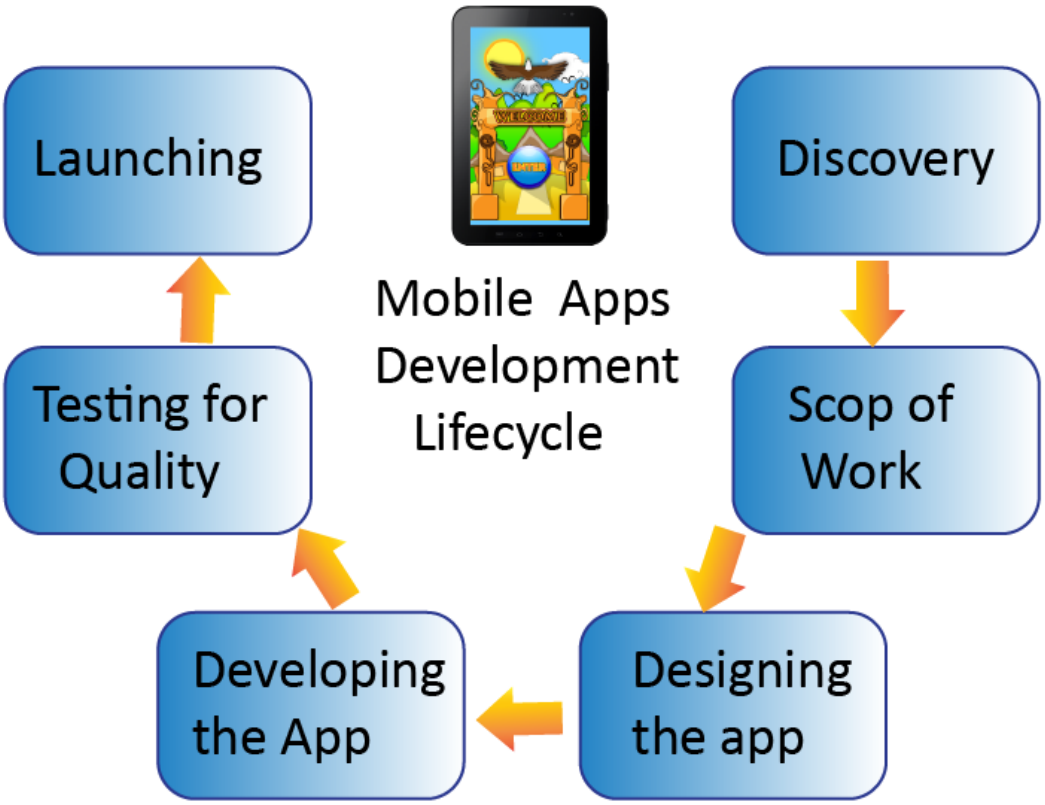

Figure 3.1

3.2.1 Discovery

The mobile application development lifecycle of this project start with the preliminary analysis which is discovery of the idea and concept of the app. In this phase, researcher will consider about a few important criteria before embark on design and development phase. Researcher needs to set the goal for the project, the platform that will be used, target user and much more. Researcher also needs to analyse the similar apps that are available in the market in order to know about the important features that have been included in the similar app. Besides, researcher also needs to get advice from the expert(s) about the idea of the app in order to find out new things that researcher might have missed out.

In this phase, researcher has conducted a meeting with the curator of Bidayuh's houses and Sarawak cultural village (SCV) representatives. All information about the Bidayuh's house in SCV has been collected for further action. Researcher also needs to find the available software development kit (SDK) that will be used later.

3.2.2 Scope of Work

After gathering all the initial requirements, researcher needs to look into the scope of work phase. As a developer, researcher needs to prepare a detailed scope of work and well organized development schedule. All the important phase and date were analysed and arrange in order to make the project flow become more structural and well-organized. Figure 3.2 shows the time table of project schedule.

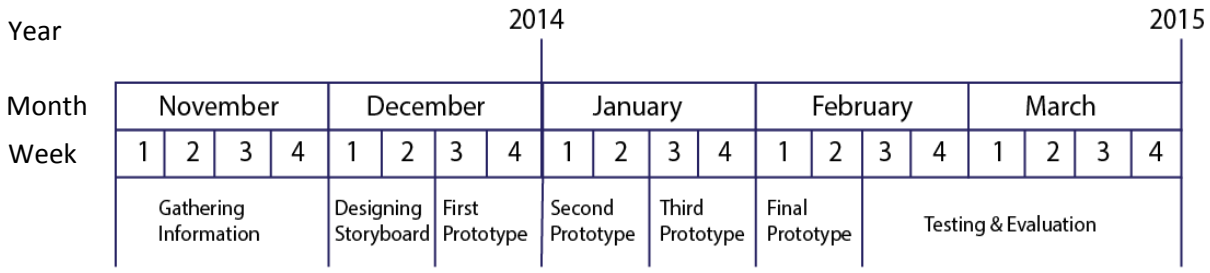

Figure 3.2

3.2.3 Designing the Mobile Apps

The third phase is to design the mobile application. In this phase, researcher will start designing the storyboard and the graphical user interface (GUI) for the app. All the element and feature of the interface such as button, logo and image were created in this phase. In this project, researcher work in a team. For designing a storyboard of the app, researcher has collaborated with other group member in the team in order to discuss about the flow of the

application, principles that will be applied to the interface, usability and accessibility of the game and more.

The standard guideline in developing mobile apps is to have a *splash screen* at the beginning of the app. Usually, *splash screen* will appear when the mobile apps is launched. This will be a sign or notification that the apps is launching. *Splash screen* will display a graphical element such as logo or animation of the apps. During this process, all the necessary thing of the system will be loaded. For this app, function storyboard will be loaded during *splash screen*. This can be shown in figure 3.3.

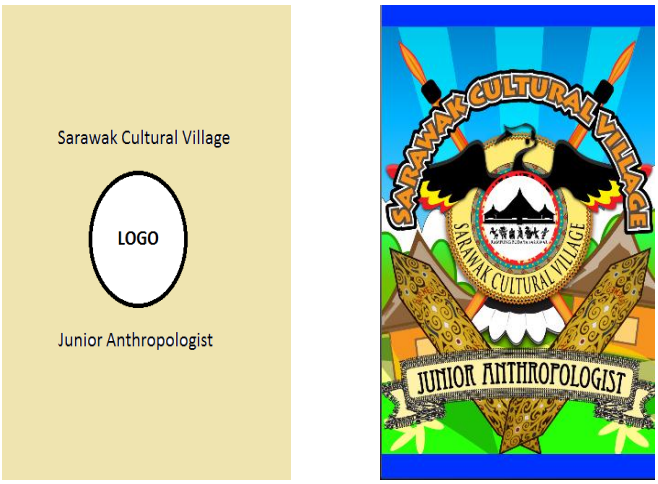

Figure 3.3: Design of *Splash Screen*

Welcoming screen will be displayed right after the *splash screen*. As stated before, target users of this app are children that visit SCV. So, *welcoming screen* is design with an attractive animation that can captures children's attention to keep focus on the activities on the apps. Figure 3.4 shown the design of *welcoming screen*.

Figure 3.4: Design of *Welcome Screen*

The *main map* screen will be displayed after several instructions given to the user. The *main map* will provide the way finding (actual map) of the exhibition house in SCV. On the map, every exhibition house is displayed as a button. The position of the exhibition house on the map referred from the actual position of the exhibition house in SCV. This will make users easily identify which house they want to visit. This can be shows in figure 3.5.

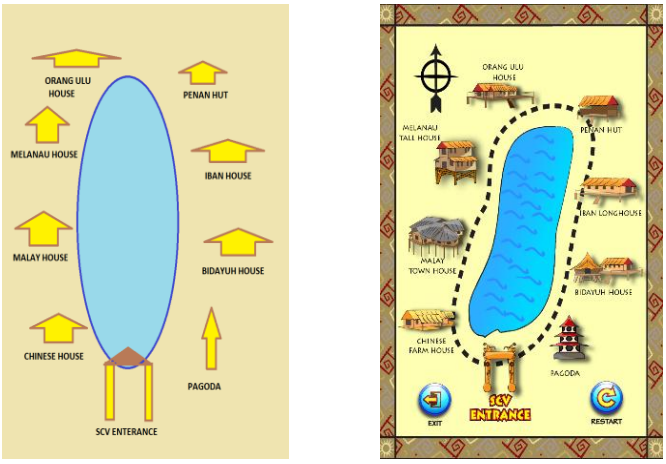

Figure 3.5: Design of *Main Map*